Georgia Department of Natural Resources

Environmental Protection Division-Land Protection Branch
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Judson H. Turner, Director

January 10, 2014

VIA E-MAIL AND REGULAR MAIL

COPY

Selig Enterprises, Inc.
c/o Mr. S. Kevin Curry
1100 Spring Street, Suite 550
Atlanta, Georgia 30309

Re: Response to March 6, 2012, EPD Comments
3rd Semi-Annual Progress Report, April 12, 2012 and;
4th Semi-Annual Progress Report, October 12, 2012
Spalding Corners Shopping Center, HSI Site No. 10639
7700 Spalding Drive, Norcross, Fulton County, Georgia
Tax Parcels 06-0313-LL0091 and 06-0313-LL0349

Dear Mr. Curry:

The Georgia Environmental Protection Division (EPD) has reviewed your letter dated April 12, 2012, in which you responded to EPD's March 6, 2012, comments. EPD has also reviewed the April 12, 2012 and October 12, 2012 Progress Reports (Reports) submitted pursuant to the Georgia Voluntary Remediation Program Act (the Act). The 4th Progress Report proposes that the next step is to submit a Compliance Status Report (CSR). However, certain potential exposure pathways have not been controlled. As noted in our previous comment letters and acknowledged in your response to comments, uniform environmental covenants (UEC) must be filed on both qualifying properties restricting groundwater usage. In addition, the vapor intrusion pathway must be further evaluated for the existing structures on Parcel 06-0313-LL0091. The vapor intrusion pathway must also be evaluated for future structures on Parcel 06-0313-LL0349 and/or addressed in the UEC for that parcel. Additional comments are provided below:

Groundwater Delineation

1. EPD acknowledges that Point of Demonstration (POD) wells do not have to be non-detect and we withdraw our assertion that a new POD well is needed downgradient of MW-6S.

2. Historic data at MW-5S indicates that the concentration of PCE at that well is increasing (see trend graph in Appendix 6 of the 4th Semi-Annual Progress Report). The concentration trends of PCE at MW-6S and MW-21S are less definite, with more fluctuation, but the most recent concentrations in these wells are above Type 1 RRS. Therefore, the Act requires the installation of an additional permanent monitoring well to complete delineation of the extent of groundwater impact beyond the qualifying properties (i.e., west of River Exchange Drive).

Surface Water Mixing Calculations

3. EPD acknowledges that 7Q10 streamflow conditions are not applicable for determining whether in-stream concentrations of tetrachloroethene meet Georgia In Stream Water Quality Standards (ISWQS) and that, as per 391-3-6-.01(5)(e)(iv) of the Georgia Rules for Water Quality Control, average annual streamflow conditions are appropriate for evaluating this contaminant.

4. The argument that Crooked Creek is the receptor of groundwater at this site and a barrier to further migration of the plume establishes a mass balance relation between the source and the stream: all of the mass that emanates from the source and that is not lost to degradation enters the stream. The current mixing calculations do not address mass balance. However, calculation of the mass flux entering the stream based on the parameters you have used in mixing calculations (a cross-sectional length of 200 ft and a thickness of 16.929 ft, a Darcy velocity of 3.96E-06 ft/s, and a concentration of 0.073 mg/L) yields a mass flux to the stream of 0.0277 mg/s. This is slightly greater than the mass flux of contaminant emanating from the source, assuming source dimensions and Darcy velocity as used in the REMChlor modeling presented in Appendix 7 of the 4th Semi-Annual Progress Report (source 5 m by 6 m, Darcy velocity 5.21 m/yr) and also assuming the concentration emanating from the source is 4.30 mg/L, which is the highest ever observed in source area samples. The mixing calculations you have presented result in an in-stream concentration of contaminant that is slightly greater than that calculated by a worst-case concentration source that emanates mass continuously, all of which reaches Crooked Creek. Therefore, EPD agrees that the mixing calculations you have presented are conservative and that the in-stream concentration of tetrachloroethene in Crooked Creek will not exceed Georgia In Stream Water Quality Standards (ISWQS).

5. The value used in mixing calculations for Darcy velocity is incorrect or requires explanation. The Darcy velocity should be the product of the hydraulic conductivity (**K**= 3.18E-05 ft/s in Table A1) and the gradient (***i***= *0.017* in Table A1), hence a value of 5.41E-07 ft/s is obtained, which agrees with the value of 5.21 m/yr reported in Appendix 7 (Groundwater Modeling). However, in the mixing calculations, a value of 3.96E-06 ft/s is used (see v_d in Table A1). Recalculation is not necessary because EPD agrees with the overall conclusion.

6. Section 3.3 of the 4th Progress Report calculates a maximum allowable concentration of PCE at MW-6S of 0.2509 mg/L (see C_1 in Table A2). However, the calculation should result in a maximum allowable concentration of 3.986 mg/L, which further supports the overall conclusion of negligible impact to Crooked Creek.

Groundwater Modeling

As noted in Comment 3 of EPD's March 6, 2012 letter and confirmed in the 4th Progress Report, groundwater fate and transport modeling indicates that contamination will eventually impact the parcel located between River Exchange Drive and Crooked Creek (Parcel 06-0313-LL0364). Therefore, groundwater monitoring and calibration of the model must continue until it is shown that impacts will not exceed residential RRS or until the parcel is included as a qualifying property and a UEC is placed on the property. Note that a revised Type 2 RRS of 19 ug/L and a revised Type 4 RRS of 98 ug/L may be used for tetrachloroethene. Please address the modeling comments provided below if modeling is submitted in the future.

7. EPD agrees that setting the REMChlor source parameter gamma to 1.0 is reasonable for this site.

8. The retardation factor of 1.59 calculated using BIOCHLOR is intended as a lumped or aggregate value. BIOCHLOR uses a lumped retardation factor (as does REMChlor) because it simplifies the equations to do so. However, because your model accounts for PCE only, it is not appropriate to use a lumped value. Instead, use a retardation factor

calculated for PCE only. Also, in the description of the calculation of the retardation factor in BIOCHLOR, you state that a default soil bulk density value of 1.5 kg/L was used in the calculation. It is not clear how this is a default value. The BIOCHLOR user manual reports that a value of 1.7 kg/L is typically used if field data are not available. Re-calculate a retardation factor specific to PCE and use that in the model. This should result in a higher value for the retardation factor, which may make calibration of the model to field observations easier.

9. There is an inconsistency in using decay of PCE with no yield of daughter products. Provide justification for the use of non-zero decay rates for PCE when no daughter products are produced and evaluation of the site shows that the potential for reductive dechlorination is low. BIOCHLOR recommends 0 for decay rates if there is no evidence of reductive dechlorination.

10. For future progress reports, provide input and output data sets used in REMChlor and SourceDK model runs used to predict concentrations. If possible, provide a screen-shot of each model run (as was done for the SourceDK runs) showing input parameters.

11. Some of the parameter values used in REMChlor are explained and some are not. For example, it is explained that the value used for Darcy velocity is based on the average hydraulic conductivity from slug tests and the gradient from groundwater elevation data. On the other hand, the value used for the initial source concentration, initial source mass and effective porosity are said to have been estimated, without further explanation. Provide a table (or narrative description) giving the value of each parameter used in the REMChlor model, including source parameters, with remarks describing the basis for estimated values and explaining why that value is considered appropriate.

12. Provide a brief description of how the REMChlor model was calibrated for before-remediation and after-remediation scenarios. Include a table showing which parameters were varied and their final (calibrated) values and the resulting simulated and observed well concentrations.

13. Provide a sensitivity analysis of the calibrated REMChlor model that identifies the parameters to which the model is most sensitive and ranks their relative importance in determining predicted concentrations.

Sampling

14. During the September 2012 event, the pH had not stabilized (varies not more than +/- 0.1 units over three consecutive measurements) when the sample was collected from wells MW-13S, MW-18S, and MW-19S. Continue to purge until stability is achieved.

15. For the Low-Flow purging method, the pump intake should be placed near the mid-point of the screened interval (see Groundwater Sampling, USEPA SESDPROC-301-R3, Section 3.2.2). Place the pump intake at the recommended location in future sampling events.

16. Polyethylene tubing may be used for routine monitoring events; however, Teflon tubing must be used when sampling to show compliance with Risk Reductions Standards, in accordance with USEPA SESDPROC-301-R3.

Selig must address these comments to EPD's satisfaction in order to demonstrate compliance with the provisions, purposes, standards and policies of the Act. EPD may, at its sole discretion, review and comment on documents submitted by Selig. However, failure of EPD to respond to a submittal within any timeframe does not relieve Selig from complying with the provisions, purposes, standards and policies of the Act.

Please address the above comments in subsequent semi-annual progress reports. Include the results of the downgradient delineation well, the vapor intrusion assessment for Parcel 06-0313-LL0091, and the draft UECs for Parcels 06-0313-LL0091 and 06-0313-LL0349 in the next semi-annual progress report due April 12, 2014. If you have any questions, please contact Terry Allison at (404) 463-7513.

Sincerely,

Charles D. Williams

Charles D. Williams
Program Manager
Response and Remediation Program

c: ✓Michael J. Haller, P.G., Sailors Engineering Associates, Inc.

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